

ABSTRACT OF THE DISCLOSURE

The present invention is directed to the upgrading of heavy hydrocarbon feedstock that utilizes a short residence pyrolytic reactor operating under conditions that cracks and chemically upgrades the feedstock. The process of the present invention provides for the preparation of a partially upgraded feedstock exhibiting reduced viscosity and increased API gravity. This process selectively removes metals, salts, water and nitrogen from the feedstock, while at the same time maximizes the yield of the liquid product, and minimizes coke and gas production. Furthermore, this process reduces the viscosity of the feedstock in order to permit pipeline transport, if desired, of the upgraded feedstock with little or no addition of diluents. The method for upgrading a heavy hydrocarbon feedstock comprises introducing a particulate heat carrier into an upflow reactor, introducing the heavy hydrocarbon feedstock into the upflow reactor at a location above that of the particulate heat carrier so that a loading ratio of the particulate heat carrier to feedstock is from about 15:1 to about 200:1, allowing the heavy hydrocarbon feedstock to interact with the heat carrier with a residence time of less than about 1 second, to produce a product stream, separating the product stream from the particulate heat carrier, regenerating the particulate heat carrier, and collecting a gaseous and liquid product from the product stream. This invention also pertains to the products produced by the method.